1. Define
   1. Wiggle\_\_\_\_***a wiggle in time is a vibration; a wave is a wiggle in time and space***\_
   2. Standing wave\_\_\_\_\_\_\_ ***also known as a stationary wave – is a wave that remains in a constant position. Two opposing waves combine to form a standing wave***
   3. Chinook\_\_\_\_\_***as the air descends, it compresses again and the energy that it contains is concentrated again causing the temperature to rise***
   4. Temperature inversion\_\_\_***\_condition in which the temperature of the atmosphere increases with altitude in contrast to the normal decrease with altitude and can trap pollutants***
2. What force binds molecules? \_\_***electrical\_\_\_\_\_***Atoms? \_\_\_\_\_\_\_\_***electrical***\_\_\_\_\_\_\_\_\_
3. In what way(s) are facts, theories and laws the same? (hint: new information)\_\_\_\_\_\_***all can change***\_\_\_\_\_\_
4. Be able to describe the **electromagnetic spectrum**
   1. Wavelength\_\_\_\_**wavelengths, frequency and energy varies greatly**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Speed\_\_***\_ all have same speed- of light\_\_\_\_\_\_3.0 X 10 8 m/s***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. visibility\_\_\_\_\_\_\_\_\_\_***most are invisible***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Temperature related to wavelength ***\_\_shorter wavelength, higher temp & higher frequency***\_\_\_\_
5. Info about **sound**
   1. Type of wave (transverse, longitudinal) \_
   2. What it travels fastest in – Phase, humidity, temp: ***sound travels fastes in solids, warm, humid***\_\_\_\_\_\_\_
6. Info about **waves**
   1. Direction of vibration (***transverse ; at right angles vs. longitudinal: in direction of wave travel)\_\_***
   2. Position of node, antinode \_\_\_***node; no motion antinode; at max amplitude; crest***
   3. What waves (and speeds) can travel through different mediums (or not; vacuum)\_

***Transverse- through vacuum at speed of light; Longitudinal, no vacuum & speed varies***\_\_\_\_\_

1. Affect on change in length, mass, and gravity on pendulums \_***mass; no effect (length & gravity do have; the longer and the farther from gravitational source, the slower it moves\_\_\_***
2. Relationship between mass, gravity and distance (sun 🡪 blackhole, increase radius, etc. )\_\_**the farther you are from the center of the mass, the less gravity you will have\_\_**
3. Result of matter/antimatter contact\_\_\_***annihilation of equal amounts & converted to pure energy***\_\_\_
4. Surface area/volume ratios (smaller apples need ***more*** caramel coating), cooking time…***Larger has less surface area***
5. Buoyancy-
   1. Greatest buoyancy- floating or **submerged** object? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Displaced water = (volume of displaced \_***\_ In the case of an object that sinks (is totally submerged), the volume of the object is displaced. In the case of an object that floats, the amount of fluid displaced will be equal in weight to the displacing object***.
   3. Ice in glass melts- affect on water level & temperature\_\_***water level will not change- even if all melts; the temperature will not change until all the ice has melted\_\_\_\_\_\_\_***
6. Faster fluids affects on pressure, \_\_***the faster the fluid flows, the lower the internal pressure (vacuum*)\_\_\_**
7. Difference between gases & plasmas-\_***plasmas can carry a current***\_\_\_\_\_\_\_\_
8. Why would welding sparks not burn you? ***While the temp. is very high, there are not enough molecules to transfer the energy.***
9. Energy Info-
   1. Internal energy related to temperature when given specific fluids- ex. ice vs. hot cup ; ***large volumes will have a larger internal energy due to # of molecules, even if the temperature in the small amount is much larger.***
   2. Cooling vs absorbing times based on color- ***black absorbs and releases heat faster than white.***
   3. Phase change & gaining/losing heat- What are the cooling/warming processes and WHY?

***There is no temperature change during a phase change (when boiling/melting, etc ) are occurring. Evaporation looses fastest molecules and cool molecules remain at the surface, making it cooler- so evaporation is a cooling process. Boiling also looses molecules with most energy, leaving behind the slower ones with less energy (cooler). Condensation is the opposite of these and is a warming process***

1. Effect of adding/removing energy during phase change? (EXPLAIN) ***There is no change in temperature during a phase change because all molecules must reach the same temperature before the temp can change.***